

Electronics & Electrical Engineering Strate() Claboratory Strate() Planning

Bill Anderson, Director December 2005



Agenda







- EEEL in a Nutshell
- Commitment to Strategic Planning
- Challenges & Opportunities
- Approach & Process
- What We've Learned So Far





EEEL in a Nutshell



EEEL...







Has exceptional staff
 with over half located in Boulder





- Manages nanofabrication cleanrooms at both sites that are shared by several OUs
- Is home to two Offices (OMP and OLES) that provide funding across NIST
- Is a very lean organization





EEEL Organization EEEL Management Team



EEEL Laboratory HeadquartersWilliam Anderson, Director
Alan Cookson, Deputy Director



Office of Law Enforcement Standards Kathleen Higgins



Office of Microelectronics Programs Stephen Knight



Semiconductor Electronics Division David Seiler



Optoelectronics Division

Kent Rochford

Electromagnetics Division

Dennis Friday



Quantum Electrical Metrology Division James Olthoff





Challenges & Opportunities EEEL Labor Costs vs. Staff Leve

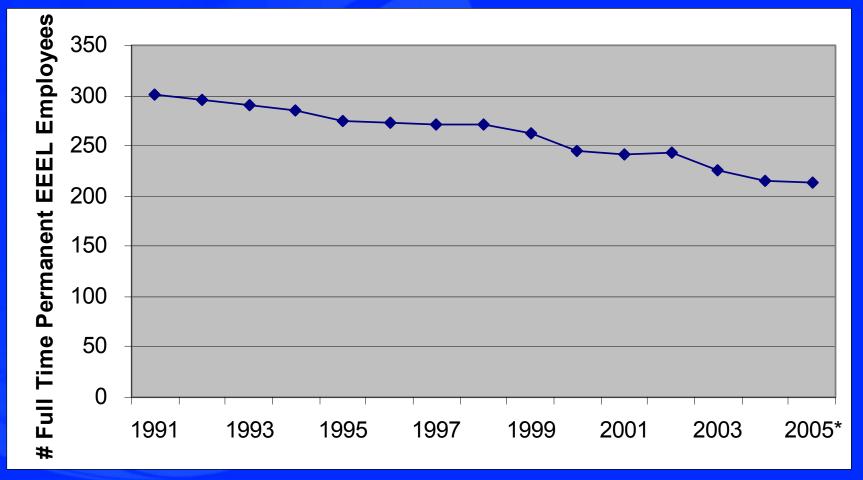






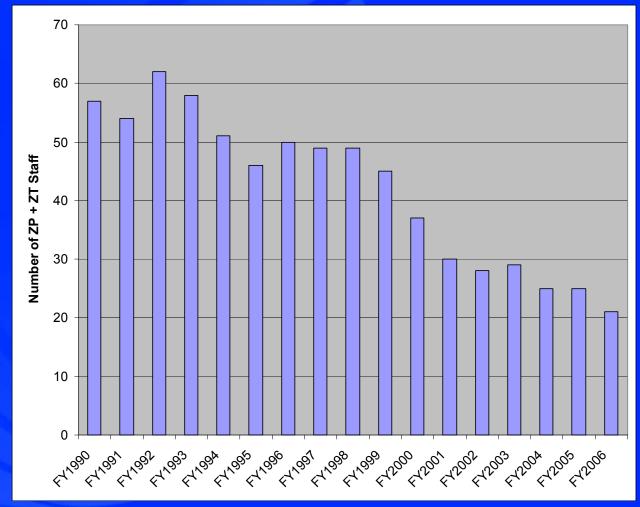
Challenges & Opportunities Declining Permanent Staff







Challenges & Opportunities Decreasing Metrology Staff



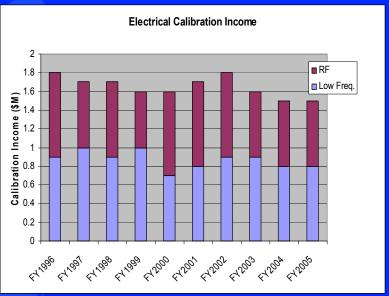
Only ONE NEW HIRE in last 8 years in Low Frequency Metrology onics & Electrical Engineering Laboratory

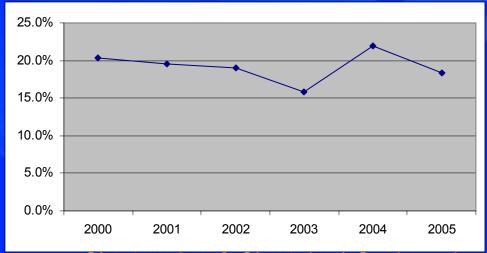




Challenges & Opportunities Challenging OA Environment

Slightly decreasing calibration income





Takes increased efforts to maintain constant other agency funds



Challenges & Opportunities Building on the Strength of our Staff



arel Urhanek Award





Vision Award



Award



Award





Someting laboratory







Challenges & Opportunities Steps Taken to Stay Within Budget

2003 RIF

Reasons:

- Flat STRS budget
- Decreases in external funding

Positions Eliminated: 33

2005 RIF

Reasons

 \$2M of EEEL STRS was designated for outside beneficiaries in 2004 (cut to base)

Positions Eliminated: 15





Commitment to Strategic Planning Why Strategic Plan?

- We owe it to our staff
 - Individual career planning
 - "no surprises"
- Enables our staff to contribute to common goals
 - Align projects with Division, Lab, NIST objectives
- Positions our Lab for maximum impact and success







Approach & Process Ground Rules for











- Builds on strong division-level plans
- Must engage all staff at some level
- Plans available to all staff
- Offices provide trends and forecasts





Commitment to Strategic Planning Charge from NIST Director



Establish a process to ensure highest priority programs, aligned with national priorities and NIST mission, are fully funded





Approach & Process Process

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Progress Report on Mandates and At-Risk Projects

Divisions Develop Strategic Plans October - May





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Progress Report on Mandates and At-Risk Projects

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Office of Science and Technology Policy, Office of **Management and Budget**

07 Priorities:

- Homeland Security
- High-end Computing & Networking
- National Nanotechnology Initiative
- Priorities in Physical Sciences
- Understanding Complex Biological Systems
- Energy & the Environment



Executive Office of the President Office of Management and Budget



Executive Office of the President Office of Science and Technology Policy



DoC

DoC Secretary priorities: Standards, Manufacturing, gineering Laboratory





Approach & Process Lab Level Guidance Docum









"Establish a process to ensure highest priority programs, aligned with national priorities and NIST mission, are fully funded."



NIST Strategic Planning

- USMS
- NIST Mission

EEEL Director

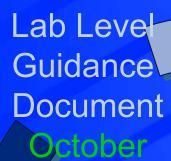
- Interpretation of above guidance
- Derived implications for direction of EEEL











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Progress Report on Mandates and At-Risk Projects

Divisions Develop Strategic Plans October - May





Approach & Process Office Trends & Forecasts









OLES

- Forecasts from each OLES technical area
- Highlights from Inter-Agency Working Groups
- Funding outlook
- Sponsor priorities
- New opportunities

OMP

- Technology Trends
- SIA Roadmap



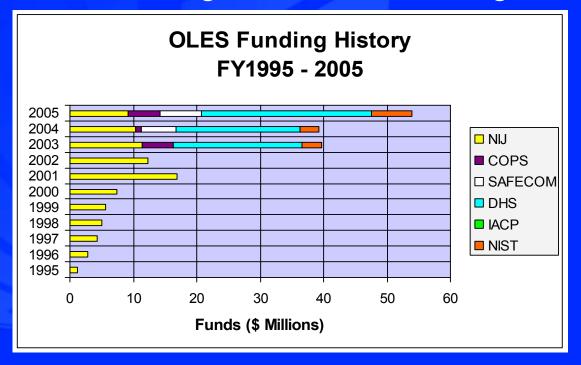




Challenges & Opportunities Leveraging the Growth of Con Management Standard Control of Law Enforcement Standard Control of C

- Company At-Risk Projects

 Contains At-Risk Projects
- \$54M budget, primarily from other agencies
- Largest provider of "intramural" funds at NIST
- Over half the budget funds external organizations







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Progress Report on Mandates and At-Risk Projects Divisions Develop
Strategic Plans
October - May





Approach & Process Division Level Planning









- Bottom up
- All staff encouraged to participate



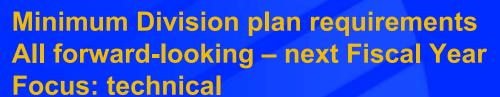
- Direct industry interaction
 - Fact finding trips to conferences, industry sites encouraged
 - Trip reports available on web
 - Guest researchers and staff sabbaticals





Common Template for FY0





- 1. Executive summary
- 2. Mission, vision, values
- 3. Brief description of division
- 4. Brief description of planning process
- 5. Summary of key strategic findings
 - Environmental scan
 - Internal & external actionable findings
- 6. Goals/strategies for division
 - Major out-year goals (e.g. 3- and 5-year goals)
 - Major areas of investment / divestment
 - Significant issues / challenges / responses
- 7. Summary of division strategic portfolio
 - project / technical area impact, risk, and timeframe
- 8. Conclusions



Semiconductor Electronics Division Strategic Plan - 0

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EEEL Program Review

Divisions Develop Strategic Plans October - May

Challenges & Responses

Issue	Challenge	Response
Funding and Staffing	Increase IM, OA, and STRS funding	Raise IM + OA to 40%, plus develop FY06 plan for initiative funding
N3F and Nanofab	New customers, partnerships, initiatives, and outside resources required for success	Develop strong plans, increase visibility and outreach
Nanoelectronics	Develop a compelling new nanoelectronics research thrust	Create and implement new research effort in FY06
Nanoelectronics Theory	Lack of nanoelectronics theory	Develop partnerships and acquire staff
Nanobio	Nano-biotechnology research in SED	Identified as growth area
CD Metrology	Future Efforts on CD Metrology	Non-STRS funding based and/or transition to Nanodevices or MEMS
Electronic Information Group	Broader, stable funding	Increase visibility and outreach





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- Every project reviewed
- Focus on identifying "EEEL mandates" and "projects at risk"
- Consensus on how to manage the EEEL mandates for success







- What are "EEEL mandates"?
 - Essential for national priorities or NIST mission
 - Represent a EEEL commitment to maintain resources and staff to complete on schedule
 - Score high against EEEL Project Evaluation Criteria
 - Will have annual milestones and deliverables tracked at the EEEL level





- What are EEEL "projects at risk"?
 They include those which may be:
 - Under-resourced
 - Of lower priority
 - Under-performing
 - Not world-class
 - High opportunity exploratory efforts















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Were "mandated" projects resourced for success?

Were "at risk" projects managed?













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Approach & Process EEEL Strategic Plan







- Consensus on Lab's highest priorities
- Guidance on mandates and projects at risk
- Top-down environmental scan
 - International activities
 - Leadership of CCEM WGSP
 - Role as expert on NPL planning panel
 - Leadership of SIM Quality System Task Force
- Labwide strategic directions
 - Strategy for measurement services.
- Does not contain top-down project ranking











Lessons Learned to Date







- Full staff engagement is critical
- The discussions can be more important than the resulting documents
- We need to strike a balance between our core NMI function and providing industries needed measurement science and standards

